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THE

OPHTHALMIC RECORD.

VOL. III. NOVEMBER, 1893. No. 5.

AMBLYOPIA FROM SUPPRESSION OF THE VISUAL IMAGE.*

BY WALTER B. JOHNSON, M.D.,

PATERSON, N. J.

In convergent strabismus, except the squint be of the alternating variety, there is present an amblyopic condition affecting the squinting eye, in which there is more or less marked diminution of the vision.

Hypermetropia was thought by Donders and many other writers to be the most frequent cause of convergent squint, constantly exciting excessive efforts at accommodation, resulting in convergence, confusion of images and subsequent mental suppression of the visual image of one eye. finally terminating in an amblyopic condition, in which the ability to see varied, vision being more acute in some cases than in others.

It has also been claimed by Schweigger, Alfred Græfe and others that amblyopia is not caused by squint, but exists as a primary or congenital condition probably caused by some change, structural or otherwise, in the eye itself or in the nerve

* Read at the twenty-ninth Annual Meeting of the American Ophthalmological Society at New London, Conn.

centers. This produces convergence in consequence of confusion of images caused by deficient sight.

The variety of amblyopia or suppression of the visual image in question is apparently a purely physiological condition. Ophthalmoscopic examination indicates a perfectly normal fundus, although the eye is generally hypermetropic. The nerve centers must certainly be affected by the continued mental suppression of the visual image and their functions finally practically suspended. Unless an operation be performed, which results in re-establishing binocular fixation and fusion of the retinal images, the amblyopia persists, being a progressive mental condition made permanent in the nerve centers by their loss of use and exercise of the power of vision. Amblyopia may be and sometimes is overcome, when it is first established, by a proper correction of visual defects; the commencing squint and the increasing loss of sight may thus be entirely prevented without resort to operative interference. Squint generally appears at an early age, when satisfactory examination is not practical; the amblyopic condition may be present but not demonstrable; for that reason the time of loss of vision can not be definitely ascertained and the question of the probable presence of amblyopia before the onset of the squint, or of its onset as a result of the squint, is very difficult of solution and proof. It is presumed that an amblyopia may come on as a result of squint and persist forever after even though the eyes are brought to a state of apparently perfect parallelism by operation. The vision in the amblyopic eye rarely, if ever, becomes equal to the vision of the fellow eye. The squinting eye cannot, does not, and will not enter into the visual act and has no ability to, and can take no cognizance of any object which appears on its visual axis, the power of suppressing images having become a condition and the vision decreased to such an extent that the eye is practically sightless.

The case here reported, which presents the character and history of many other cases of concomitant convergent strabismus, shows conclusively that, whatever the change which led to the loss of vision, it was not structural either in the eye ball or the nerve centers, but was in all probability a pure case of amblyopia which resulted from the long continued mental visual suppression induced by the confusion of images caused by the loss of parallelism of the eyes, and that the amblyopia was in all probability the result of the squint.

The amblyopia having entirely disappeared after the loss of the fixing eye, when all the existing conditions were changed, indicates the certainty that in this case amblyopia was a condition and not a disease. The remaining eye which had been apparently almost sightless, having become excessively amblyopic, after instruction and exercise designed to assist the visual effort, gradually increased its power of vision until perfect sight resulted and the sensitive point returned to the region of the macula lutea. The results of any passed amblyopic condition entirely disappeared, the eye-ball itself and the nerve centers returning to a perfect state of health and visual acuity.

T. McK, age 19, June 3, 1887. File forger. Has been cross-eyed since he was three years of age, and states that during his recollection he had been unable with the left eye to discern any object and define its character.

He has a manifest hypermetropia and constantly fixes with the right eye.

R. V. $= \frac{20}{15}$; $\frac{20}{15}$ w. plus 1.25 D.

L. V. = fingers at 6″, no improvement with glasses.

The fundus was apparently normal.

He applied for treatment intending to have his squint corrected by tenotomy.

June 13. While working at forging, a hot file flew from his tongs and struck him in the right eye.

Two hours after the injury the eye-ball was examined, a large wound of the globe was discovered, having extremely ragged edges and involving almost the entire globe, cutting through the cornea, iris, lens and sclerotic in the cilliary region. Enucleation was advised and performed in the usual manner in the afternoon of the same day.

June 18. The patient was doing nicely and stated that he believed he could see better.

L. E., V. = fingers at 3′

Ophthalmoscopic examination discloses a perfectly normal fundus and a hypermetropia of plus 1.50 D.

June 19. He was first instructed in locating letters on the test card. His field of vision was limited to any object upon which his attention was fixed. If placed directly in front of a test card with the region of the macula in the axis of vision he could see $\frac{3}{200}$. If allowed to read the letters on a plane of his own choosing, bringing the hypersensitive retinal spot into use, and wearing plus 2. D. the test card would appear to be thirteen inches to the left of its actual place of hanging, but he was able to read $\frac{2}{70}$ and as his instruction was continued he read $\frac{2}{15}$, and at times $\frac{2}{12}$ and $\frac{2}{8}$, the letters being moved ten inches to the left of their actual position. He finally read $\frac{4}{15}$.

June 20. After fifteen minutes instruction he was able to read $\frac{20}{30}$ w. plus 1·25 D. on a new test card, never seen before, stating that in order to see the card he was obliged to look to the left of it, although he apparently saw it directly in front of him. He could read $\frac{20}{200}$ without a correcting glass. Although there are six cards on the test frame, he insisted that he could only see one of them at a time and that in its false position.

June 21 to 25. He has been instructed daily with constant improvement in the field of vision and in the rapidity with which he could locate the letters and cards, plus 1.75 D. having been ordered and worn constantly.

June 26. He is able to select letters on any of the test cards and now locates the card in its exact position, and can see all six cards at once without special effort. His vision for near was tested for the first time since the loss of his eye with plus 1.75 D. He was able to read Jæger No. 7, but in locating a word on the test paper, with a pointer, he would point considerably to the left of its actual position.

July 1. The improvement has continued daily, since last date. He can read $\frac{20}{15}$ with his correcting glass, and Jæger No. 1, at 12 inches, locating the words with a pointer in their correct places. He dselined to accept the plus 1.75 D. he had been wearing and was ordered plus 1.25 D His visual field is normal.

Jan. 23, 1890, nearly three years after the loss of his eye.

His vision $= \frac{20}{15}$ with or without plus 1.25 D. He reads Jæger No. 1 with or without any correcting glasses, although he prefers his plus 1.25 D. for reading.

He never has had any pain, or discomfort, or any blurring of his sight since last examined, and has worked at his trade constantly since that time.

DISCUSSION.

Dr. Samuel Theobald, Baltimore:

The case is an exceedingly interesting one and I am not aware of a similar one having been reported, where through the loss of the good eye, the amblyopic squinting eye being forced to take part in vision, has so rapidly and completely recovered visual power. I think that the Doctor is justified in the view that he has taken of the significance of the case. It is extremely improbable that a *congenital* amblyopia would entirely disappear as happened in this instance. The case offers strong testimony I think in favor of the view combated of late years by Schweigger and Alfred Græfe, but which I attempted to defend several years since*, that the amblyopia of squinting eyes is a consequence and not a cause of the squint.

* Trans. Am. Ophthal. Soc., 1888.

Dr. Herman Knapp, New York:

This case is the best evidence of amblyopia ex-anopsia that I know of. I have had one case somewhat parallel. An old lady had cataract in an eye that had squinted from youth. She was operated on by Schweigger and I had to make an operation for secondary cataract, by which she got vision $\frac{20}{XXX}$. This case comes near to that of Dr. Johnson, but it does not furnish a complete evidence of amblyopia ex-anopsia and subsequent improvement of sight as the latter had not been tested before the cataract developed.

Dr. Henry D. Noyes, New York:

This is the first case in which I feel any confidence in the assumption that the amblyopia was acquired. It is the only one I know of, equally remarkable, except one of Javal. Javal had a case in which he brought the vision up to normal after three years exercise. It must nevertheless be distinctly stated that a case like this only proves that very defective sight belonging to the unused eye, is capable sometimes of remarkable improvement. It does not prove anything as to the source of the defective function. The two things are logically entirely distinct from one another. I am willing to concede that, in a portion of cases of strabismus, the amblyopia may be acquired and is not congenital, but I am far from being convinced that the majority of them are of that character. I have examined an enormous number of cases in which there is congenital amblyopia of one eye without squint. I intend to put on record my cases of congenital monocular amblyopia with refractive error. These cases are much more common than is usually supposed.

In regard to this particular case, I should have been glad if examination had been made to determine whether or not there had been color scotoma at some period of the history. Color scotoma is very common in amblyopia and strabismus. Further-

more, other conditions obtain. I recently saw three cases of strabismus. In one, the squinting eye had an absolute scotoma of ten degrees, with absolutely no light perception. The patient was a woman 28 years of age who had been operated on in each eye, but the squint had not been cured.

The most probable explanation in favor of the view that squint amblyopia is acquired, is on the assumption that the cerebral part of the visual function is in suspense, and by continued suspension loses conscious activity. This however is a very different thing from the usual assumption which makes the lesion ocular.

In opposition to this view are numerous cases where persistent scotoma, persistent dimness of sight argues in favor of a local lesion in the eye, which I do not believe is the result of disease.

An interesting feature that Dr. Johnson records is the improved projection in looking at an object. It seems to me that might have been corrected by a tenotomy of the internal rectus. In time, he overcomes that. That is a fact that is frequently observed in dealing with strabismus when you attempt to restore binocular vision.

I may perhaps make this remark with the view of assisting in the determination of central scotoma: If you have a patient whose vision in the amblyopic eye may be $\frac{3}{x}$ and type consisting of a line of five letters: you ask him to look at the middle letter and he will tell you that he can not see it, but that he sees those on either side. Then you may change his point of fixation from one point in the line to another. You will find that the object on which he attempts to fix is not clear, while objects excentrically placed are seen. This is better than the perimeter. You can do it with the perimeter or better with the black-board.

Dr. Samuel B. Risley, Philadelphia:

I think that the existence of amblyopia ex-anopsia in con-

vergent strabismus can no longer be doubted. I some time ago recorded a group of such cases in which the presence of amblyopia from disuse was demonstrated. In one case the right eye which was amblyopic had been operated on to correct a strong convergence and after four years the case came under my observation, the left eye now being the squinting eye. The right eye before the operation had been almost blind, but was found with V. = $\frac{6}{7}$. In each eye there was hypermetropia of 3 D. She could barely count fingers with the left, fixation being eccentric. The right eye had normal acuity of vision, $\frac{6}{6}$. I did tenotomy on both interni, corrected the refraction and insisted upon exercise of the amblyopic eye for half an hour, morning and evening, the right eye being excluded by a bandage. Vision steadily improved so that at the end of three months it had come up to $\frac{6}{7}$. Here was an instance where the amblyopia had existed at different times in each eye and had been recovered from.

Another case was that of a small boy aged 2 or 3 years who was brought to me with developing convergent strabismus. I followed my usual habit and placed the eyes under a mydriatic, gave smoked glasses and exercised the right eye, which showed the greatest tendency to convergence, and followed the boy through three years. Finally he had learned his letters and I found that he had vision of $\frac{6}{7}$ or $\frac{6}{9}$ in each eye with correcting glasses. He had hypermetropic astigmatism with asymetrical axes. Finally after an absence of six months, he came back and vision had sunk to $\frac{1}{3}$ in the right eye and maintained its former standard in the fellow eye. I then placed an opaque disc between the glass and the eye on the right side, and had him wear this morning and evening. Under this, vision came up once more to $\frac{6}{12}$ and some letters in $\frac{6}{9}$. In other words, it distinctly improved under exercise, and the exclusion from vision of the fixing eye. After watching the case for a few

weeks longer, I did tenotomy on the right eye with the result of correcting the tendency to convergence and restoring binocular sight. Two weeks from the date of the operation, vision was $\frac{6}{6}$ in each eye with correcting glasses. I think that with the evidence of such experience, we can no longer deny the existence of amblyopia from disuse, and must admit that all these cases certainly are not congenital, since the amblyopia developed under observation and disappeared under the measures adopted for its relief.

Another case which has already been published was that of a child, the daughter of a physician, who had convergent strabismus with vision reduced to one-half in the squinting eye. I corrected the existing hypermetropic astigmatism with the result that the strabismus, which before had been fixed, became periodical. She came back after several years, on account of headache following work at a near point. The strabismus had been so entirely removed by the use of glasses, that I did not suspect it to be a case of strabismus until the former record was consulted. Vision was perfectly normal in each eye, i. e., the amblyopia had disappeared. In view of these clinical facts it is futile to deny the occurrence of amblyopia from disuse.

Dr. B. Alexander Randall, Philadelphia:

Cases of cure of amblyopia ex-anopsia will but rarely be recorded in spite of the challenge of these who deny such a condition.

These cases must always be difficult to definitely settle, because of the youth of many of the patients and the difficulty of applying the tests of vision in such cases. A case that has greatly interested me is one that has grown up under my eye. Strabismus occurred periodically in the second or third year, always with fixation of the right eye. Mydriatics relieved the habit to a certain extent, up to about the fifth year; but the strabismus then became nearly fixed and glasses seemed neces-

sary. A glass of some 6 D. was given and under its use the child began to see, she could learn her letters and I was able to determine that the now slightly converging eye had $\frac{20}{XL}$ contrasted with $\frac{20}{XXV}$ in the right. To-day, the hypermetropia remaining the same, and the case having never been operated upon, vision is $\frac{6}{6}$ in each eye, although the tendency to strabismus has never been wholly overcome. She has full normal vision, rather better in the left eye, which still tends to converge; and turns strongly in the moment her glass is removed, and ordinarily she has no difficulty with vision with both eyes. The eyes working in perfect harmony with normal vision.

Each of the other less hypermetropic children has had periodic strabismus; but has escaped with only a need for glasses at near work, vision having always been normal in each eye.

Dr. Samuel Theobald, Baltimore.

The region in which the highest grade of amblyopia exists in the squinting eye has I think an important bearing upon the question, whether the amblyopia is due to the squint or is a congenital condition. The retina is most amblyopic about the yellow spot, and to the nasal side of this region in convergent strabismus; while in divergent strabismus it is the macula and the temporal portion of the retina which are most affected, just where it is most important in order to prevent diplopia and confusion of vision, that the retinal image in the squinting eye should be suppressed. The other portions of the retina are much less amblyopic. A case illustrating this point has occurred to me. A young woman of 25 years had a convergent squint without diplopia. I did a tenotomy upon one internal rectus, leaving a considerable residual squint, and still no diplopia. Then I divided the internal rectus of the other eye, and got a slight over-correction, and at once there was diplopia. The moment the retinal image through the over-correction produced

by the second operation fell upon the outer side of the yellow spot, there was diplopia, the vision in this region of the retina having remained comparatively unaffected, because the images formed upon it, caused little or no confusion of binocular sight and so were not mentally suppressed.

Dr. E. E. Holt, Portland, Maine.

Several years ago (1885), I read a paper before the Society entitled, "Strabismus, its correction when excessive and in high degrees of Amblyopia", in which I described the method I had then practiced seven years of advancing the weakened, attenuated muscle in conjunction with tenotomy of its opponent which maintained the deviation in these cases. I reported a case in which this double operation had been performed when several tests showed the eye operated upon was blind, but after the operation, finding there was sight, practice brought the vision up to $\frac{1}{2}\frac{1}{4}$. Some of the members of the Society doubted the accuracy of the records, although it was related that several tests were made with the same result. I think continued practice with strong lenses will give surprising results in some cases, but it requires patience and perseverance.

Dr. W. B. Johnson, Paterson, N. J., closing:

It seems to me that the peculiarities, in this case, are the length of time that the amblyopia had persisted, the return of perfect vision, and the shortness of time required for the vision to become normal. I was surprised to hear cases reported to-day in which, after operation for squint, vision, in the amblyopic eye became perfectly normal In my case vision became normal, in the amblyopic eye, but there was no counteracting features on account of the loss of the eye, which had previously performed the entire visual act. In my experience, I have failed after operations for squint to find perfectly normal vision restored to the squinting eye, even when binocular single vision was attained.

The physiological central scotoma which Dr. Noyes speaks of was present. The period of time required for the return to normal vision was, from the thirteenth of one month to the first of the following month, the vision then being $\frac{20}{15}$, with a correcting plus lens and subsequently becoming $\frac{20}{15}$, with or without such correction. It would seem to be established, that almost complete loss of vision from amblyopia certainly can and does exist without any diseased condition being present either in the eye itself, or in the nerve centers; that amblyopia is in that case due to the continued "supression of the visual image," which is a condition self-limiting under certain circumstances, and not a disease either causing or caused by stribismus.

SYMPATHETIC OPHTHALMITIS,

Clinical lecture delivered before the Northwestern Wisconsin Medical Society, at Stevens Point, July 11th., 1893,

By H. V. WÜRDEMANN, M.D.,

Milwaukee, Wis.

Gentlemen:

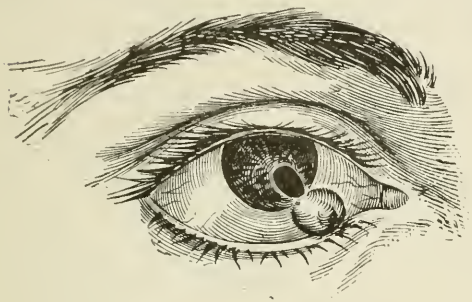
We have before us two interesting cases of ocular traumatism from which correct inferences should be drawn as to management. Every surgeon realizes the importance of that bugbear of ophthalmic practice, that disease whose insidious course lies, not in the injured eye, but in its fellow, and which having once gained a foothold eventuates in perhaps utter blindness. To those who have temporized with injuries of the ciliary region of the eye or have had sympathetic ophthalmia following an operation on the eyeball, this disease seems indeed an awful visitation. All of us of any experience in ocular therapeutics have seen such cases. It is commonly considered that punctured wounds of the ciliary region are almost invariably followed by this affection in the other side; and such cases are legitimate subjects for enucleation of the injured organ, despite the fact that vision may yet be good. But cases of sympathetic trouble are known to have arisen from other causes, although such traumatisms cause about 80% of the disease.

Foreign bodies within the eye, incarcerations of the iris, ciliary scars, luxation or calcification of the lens, ossification of the ciliary body or choroid, tumors, incarceration of the optic nerve in the stump after enucleation, ill-fitting eye-shells and last, but not of least importance to the surgeon, is the fact that such operations as cataract extraction or discission have caused sympathetic disease.

Two forms of sympathetic trouble may be differentiated. The one is sympathetic irritation or neurosis, in which there may be but few signs of a pathologic process going on in the injured eye, which may have acquired the traumatism anywhere from a couple of weeks to many years before. There is, however, congestion of the ciliary region and deep-seated pain on pressure, showing that the eyeball is not quiet. In the sympathizing eye there may be dimness of vision, photophobia, defective accommodation, contraction of the visual field, neuralgic pains and hyperemia of the fundus. Any or all of these symptoms may be present. The patient may complain that he has had several attacks of "sore eyes" with intervals of quiet. It is a debatable question whether this passes into the graver forms of sympathetic ophthalmitis in which all these symptoms are more pronounced and which is attended with serous iritis, irido-cyclitis etc. Many of the latter begin as a neuro-retinitis, as in one of the cases before you. It is possible that both the neurotic and the microbic theories of sympathetic disease are correct, as I am sure that many patients have recurring attacks of sympathetic irritation without permanent impairment of vision in the sympathizing eye, and in the course of many years have not had ophthalmitis. Whoever has seen the rapid production of sympathetic inflammation of a high degree after an infecting wound of the ciliary region will not question the theory of microbic migration brought forward by Deutschmann.

Case 1. The first case we will consider is that of this young man who had an incised scleral wound some eight years ago. He comes to us on account of poor vision in the injured eye and about the defect in his personal appearance. You will note that the pupil is drawn downward and inward, and that there is a well defined translucent swelling about the size of a grain of corn under the conjunctiva at the corneal limbus (see fig 1). At first sight this seems a dislocated lens and the suspicion is

apparently confirmed on testing his vision and using the ophthalmoscope for the eye is highly hyperopic and may be thought to be aphakic. By careful examination we find that there is a high degree of compound hyperopic astigmatism (approximately, + 2·00 ⊃ + 8 00 cyl., 90°.)



[Fig. 1.]

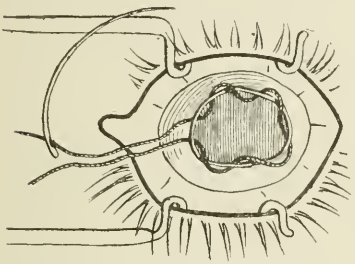
The mode of determination of aphakia especially difficult in this case, is as follows: observe the reflection of the ophthalmoscopic mirror on the anterior surface of the cornea, this is large and bright and moves *with* the direction of the mirror; there should be a second reflection of the anterior surface of the lens a little smaller, and rather faint, moving in the *same* direction, and a third bright but small image from the posterior surface of the lens, moving *against* the mirror. Where these three images can be obtained, aside from the fact that an aphakic eye is usually 8.00 to 10.00 D. hyperopic, we may say that the lens is still in the eye. This then is a cystoid degeneration of the cicatrix with impaction of the iris which some day may give rise to trouble. It would have been good practice to have enucleated this eye shortly after the injury as it is one case out of a hundred; ninety-nine other cases would have probably given rise to sympathetic disease on the uninjured side. The vision of the other eye is normal and there is no history of trouble. What should be done in this case? On account of danger of the protuberance being injured from accident as well as for cosmetic purposes, it would be well to cut off same and sear wound with the galvano-cautery. Case should

be watched for weeks afterward. I would not excise this eye at this late time unless sympathetic symptoms should set in.

Case 2. In this old man you will notice that both eyes are inflamed. A blow upon the right eye eight years ago was followed by blindness of same some months later. While feeding cows one month ago he was again struck in the same eye, but as far as the history goes and judging from external appearance it seems that there was no external wound of the eye-ball. There was severe bruising as is evinced by the remaining unabsorbed blood-clot in the anterior chamber. As well as I can determine through the clouded media there is an opaque dislocated lens in the vitreous. The ciliary region is tender and very painful to the touch. Tension is decidedly diminished. The vision of the other eye has been failing for two weeks, there is marked ciliary congestion, cloudiness of the vitreous, the pupil is movable although somewhat inactive to light. The picture by the ophthalmoscope is pronounced. The edges of the optic disk are blurred, the vessels decidedly tortuous and dilated, and whole fundus is hazy. There is no question but what we have here a beginning sympathetic ophthalmitis and the injured eye should be enucleated at once. It may already be too late and the process may develop into a full-fledged sympathetic ophthalmia going on for months or even years. His chances are about even that immediate operation will stop the process. Enucleation during the first few days of a sympathetic ophthalmitis or even before the disease has set in does not guarantee against stoppage of the process. Two years ago I enucleated an eye, in the mate of which there was less trouble than in this case, and yet sympathetic disease progressed, and the patient is even now under observation as the eye although blind is not quiet. The patient refused a second enucleation and the disease has run its full course. An interesting point in this man is the fact that there has been no penetrating wound

of the eyeball and yet indubitable sympathetic ophthalmitis has set in.

The patient was then anæsthetized by ether and the eye romoved, the optic nerve being divided as far back as possible and the operation being finished by gathering the edges of the cut conjunctiva with a cat-gut suture in a pouch, the capsule of Tenon and muscular attachments being included at the same time. (See Fig. 2). The eye socket was filled with vaseline and a strip of iodoform gauze laid between lids. Gauze bandage and cotton applied for the outer dressing. In my experience the formation of a good stump by the pouch suture is highly advantageous and should be done in all cases except those in which there is orbital cellulitis and where drainage is to be desired. In no case that I can remember have I been obliged to take out the suture by reason of retained blood clots or have not had union by first intention. The formation of granulations and adhesions, a frequent result where the orbit is simply packed with gauze and the wound left open, is thus avoided; and, as a rule, an artificial eye may be fitted within a week from date of operation although of course the fitting should be deferred if possible until all traces of the operation have passed away, as a better fit may be then obtained. In movement and shape the stump resulting from this operation is ideal.



THE SIMPLEST AND MOST PRACTICAL ELECTRIC APPARATUS, ESPECIALLY FOR GALVANO-CAUTERY OPERATIONS.

ARTHUR G. HOBBS, M.D.,

Atlanta, Ga.

Member of the American Medical Association; of the Pan-American Medical Congress; Ex-president of the American Rhinological Association; Member of the Georgia State Medical Association; and fellow of the Atlanta Society of Medicine; etc., etc., etc.

The little apparatus that I am using especially for galvano-cautery operations, is the only perfect appliance for that purpose in my knowledge. It has been used in my own and assistants' rooms, perhaps a thousand or more times during the last year, and in no instance has it ever failed us, or caused us any care or trouble. Indeed no thought of its presence is ever suggested until it is needed for actual use, quite unlike any of its predecessors, even the best of which required an occasional charging. It is small and compact, contained in a mahogany box eight inches long, four inches thick, and four inches deep and is securely screwed to the wall at a convenient distance from the operators chair.

The wires from an alternating current of 52 volts, the most generally used circuit, particularly in the medium and smaller cities, are brought into the operating room from the street wires, and attached at each upper corner of the little box. The conducting wires are similarly attached to the lower corners.

The apparatus is now ready to be used for the cautery, the magnet, or for the small incandescent lamp, and it remains always and ever ready. When the moment for using it arrives it is only necessary, first to turn a screw, projecting from its

nearer surface, with the left hand, while the instrument is held with the right. It thus serves as a gauge for measuring out the exact quantity of electro-motive force in the form of heat, magnet power, or light, by modifying the 52 volts conducted to it from the nearest street transformer, into the fractional number of volts that may be required for the occasion.

As both the force and ampereage in actual use with this transformer is acquired by induction, and is not in direct contact with the initial current, there can be no possible danger to either the patient or operator, even if the initial wires should by accident come in contact with more powerful wires.

The electro-motive force can be gauged between one and sixteen volts by the screw, and the amperage is determined by the resistance of the conducting wire.

The cost of the electric supply is very small, perhaps two or three dollars per month for all ordinary purposes, including the rent of the metre.

It is quite as easy, by modifying the force with a slight turn of the screw, to adapt it to the forehead lamp in ear operations, and to the still smaller lamp used for translucent and direct illumination in the small cavities, as in antrum diagnoses.

A much smaller cautery handle than the conventional one is more convenient for actual use, while in addition to this it may be permanently attached to the conducting cord where it is always at hand, requiring only to change the point to suit the occasion. The larger handles are necessary, however, for the wire loop operations.

The needle and a very narrow blade are the only cautery points used in my office, and in all cases they are made to enter at the most prominent part of the hypertrophied tissue, penetrate down to the bone with a white heat and then withdrawn through the same puncture while the point is hot. In no case is a wholesale destruction of the mucous membrane ever pro-

duced by applying the flat surface of the blade to the protruding part.

The needle and the narrow blade produce little or no pain when an application of a ten, or twenty per cent. solution of cocaine has been locally applied on a cotton probe, ten minutes before the operation. The annoying constitutional symptoms, that not infrequently follow even a weak spray, are rarely encountered when a many times stronger solution is applied to a limited area of mucous membrane surface.

Its easy control renders it the most reliable and certain means for making cautery operations on the cornea, because of the small amount of electro-motive force required to heat the fine points used for this purpose.

This means of treating corneal ulcers, and I may also add, of reducing the corneal part of a pterigium, is not only less painful than any other, but the resulting cicatrix is more transparent, provided the cautery is not allowed to touch the healthy cornea.

A pterigium will in some cases need no farther operative procedure, although it will usually be necessary, in addition to the cautery, to sever the vascular supply, without excising any part of the hypertrophied conjunctiva except when it is decidedly thickened.

The magnet in general use is constructed for the continuous current, yet it can be charged for the lighter uses with the alternating current. My electrician is now adapting one of these magnets to the alternating current of the apparatus.

The electric motors heretofore used for fans and drills were supplied with the continuous current only, but some are now being adapted to the alternating current.

In addition to these varied purposes that this little apparatus may be called upon to serve, the current that supplies it may be still farther utilized before its entrance.

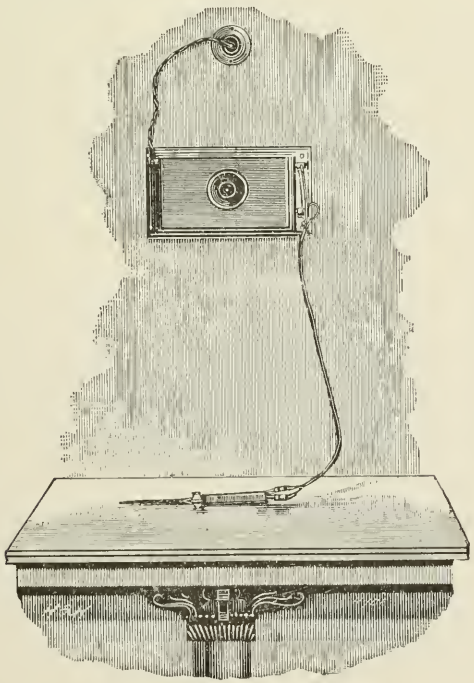
For example, it will light two incandescent lamps, and at the

same time run two fans or drills where the motors are suitable, and still supply the transformer.

While the volume of the current, or ampereage, is large, the electro-motor force can be reduced sufficiently for therapeutic uses where the alternating current is advisable.

In short, it is safe; it is inexpensive; it is always ready; it is reliable; it exacts no time or attention; it dispenses its force and volume in many practical ways; it occupies but little room and is not unsightly; it does its work perfectly, and if it once gains an entrance to the consultation room of one who resorts to electricity in many of its varied forms it will become a fixture.

In the cut below the conducting wire is represented too short. This double wire should be large in order to reduce the ohms or resistance to a minimum, and long enough to conveniently reach to the operating chair.



The Scientific Proceedings of the Section of Ophthalmology of the American Medical Association, at the Milwaukee Meeting, June, 1893.

Discussion of Strabismus Continued from page 154.

Dr. Hotz:

I agree with the main statements of the author and wish only to make a few remarks on the subject of advancing the muscle, in-as-much as I prefer the resection to the advancement of the weak muscle. I divide the tendon of the muscle, leaving a short stump at the line of insertion and then cut off a piece of the tendon, in proportion to the degree of convergence, and attach the muscle to its original place by stitching it to the stump. We gain several points by this method: In the first place we can gauge the effect to a certain extent by the size of the resection; we are sure we have a firm hold for our stitches, and they will not slip as they are so apt to do when they are through the conjunctiva only; we further-more know that the muscle will be held to the eye-ball in exactly the same line that it was originally attached. But whether we do advancement or resection, the opperation should always be accompanied by the tenotomy of the contracted internal rectus muscle.

Dr. LeMond:

If we were all of one mind in this department and never differed with each other, it is quite likely that ophthalmology would never have reached the stage of perfection and exactness that it enjoys to-day. I must say that atropia, in my hands, has not been satisfactory, in fact, I rarely ever use atropia in connection with these cases. In ninety-eight per cent. of the cases of squint I have operated on in the last year (about fifty cases) I have had a decidedly unsatisfactory result in one case.

I invariably find in these cases a vast amount of hypermetropia, and I really believe that in nearly all of these cases of

squinting eyes, hypermetropia is at the bottom of it. After the operation, I correct the error of refraction and tell these patients that they will have to wear glasses from six to twelve months perhaps, but likely by that time they will be able to go and see comfortably without them.

This course of treatment, with me, has been very satisfactory. In two cases I had to use the stitch to hold the eye *in situ*. I only do this where a complete tenotomy of the muscle has failed to put the eye on the same visual axis with its fellow. I prefer using the stitch to doing repeated tenotomies. I think the ambliopic condition is due largely to a great amount of hypermetropia. In my experience I have found the ambliopia confined to the squinting eye. I believe whenever we look more carefully to the eyes of school children the less squinting we will have, simply by applying the needed remedy, that of prescribing glasses.

Statistics show that the Germans double and thribble us in the number of glasses worn, according to the same given number of population. I think this proves to us, very conclusively, that they are just that much ahead of us in finding the early errors in refraction and cerrecting them.

Dr. Gibson:

I want to make one remark only, in favor of the advancement that has been spoken of. It does away with that protrusion of the eyeball which we have as a result of a simple tenotomy. That I think a very essential thing to take into consideration. I have seen this protrusion quite marked in some simple tenotomy operations. Combined tenotomy and advancement certainly gives better results.

Dr. Thompson closing:

I am much pleased at the interesting debate on my paper. Regarding the ambliopia of squint: I have been supprised to

find in children two or three years old, the bad vision in the deviating eye, when that eye had only squinted a few days, certainly not long enough for the sight to fail from disuse. From such experience and from the tone of some ophthalmic writers, I am inclined to think there is a great deal of doubt about the truth of amblyopia ex-anopsia. Children born with cataract and successfully operated upon some years afterwards do not, as a rule, show up blindness. If the effect of disuse be true in one class of cases, why not true in the other? The use of atropia in children for the correction of squint is not, so far as I have been able to observe, satisfactory. I have tried it for months and do not know that I ever succeeded. If the squint is entirely due to hypermetropia I think it may be overcome by glasses. Indeed all such methods should be tried before resorting to an operation. I have relieved squint in boys of fifteen and sixteen years of age by correcting the hypermetropia, for when the glasses were taken off the squint would return. I have never seen a case of strabismus corrected in a young child by operation but that, when the subject grew to be fifteen or sixteen years old, there was loss of convergence or direct divergence. I have operated on children and got the most magnificent results, but when they grew up to adult age, I was ashamed of them and myself too.

ABSTRACT OF A PAPER ON

BIFOCAL CATARACT LENSES,

By H. V. WÜRDEMAN, M.D.,
Milwaukee, Wis.

Dr. H. V. Würdemann, of Milwaukee, advocated Bifocal Lenses in aphakia and referred especially to their use after cataract extraction. The lenses should be ground with great care, of a high oval, and the reading shell should be cemented to the larger lens somewhat to the nasal quadrant. He has found it advisable to decenter lenses upwards from 1 to 4 P. D. varying with the requirements of the case in order to obviate the upward projection of the ground which is common with such strong convex lenses. The advantages gained for cataract patients by bifocal lenses are those acquired by presby-hyperopes and are obvious.

DISCUSSION.

Dr. Murrell:

I have been using bifocal lenses after cataract extraction for a number of years. I have several patients wearing them now. My next-door neighbor has worn a pair for several years, has good vision and can read fine print all day long. I advise the use of them.

Dr. Zeigler:

I have been ordering these bifocal cataract lenses for several years, in fact ever since bifocals came into general use. They are undoubtedly the most convenient lens for aphakic eyes. Even where only one eye has been operated upon, bifocals are far superior to the more clumsy "reversibles."

I think Dr. Würdeman has overlooked the very important "toric" or "ellipse" lens, which was presented before the American Ophthalmological Society by Dr. Harlan, in 1885, and subsequently discussed in a paper by Dr. Green. This lens is especially advantageous where we have a cylinder in combination with very high sphericals. It is composed of two cylinders ground on the same side of the lens, and at right angles to each other. As one cylinder is stronger than the other, we secure the effect of a sphero-cylinder; the balance of the spherical is then ground on the other lenticular surface. We thus practically divide the spherical on each surface of the lens, and then grind the cylinder on one of these spherical surfaces. This makes a much thinner lens than the old form where the cylinder alone is on one side, and the large spherical bulge is on the other. But aside from being a thin lens, its chief advantage lies in the fact that it furnishes a greater clearness of visual field, which will be promptly appreciated by the patient. This lens may also be ground periscopic. The bifocal slip can easily be added to either form. These lenses are accurately ground by John L. Borsch & Co., of Philadelphia.

Where the two eyes have been operated upon, I have sometimes prescribed a *distance* correction for one eye, and a *reading* correction for the other eye. This arrangement is particularly applicable in those cases where there is considerable muscular insufficiency. It allows one eye to enjoy clear vision for distance, and the other eye clear vision for reading. I ordered such an adjustment recently for a physician whose left eye I had operated upon for zonular cataract, while the right one still retained good peripheral reading vision. As there was considerable muscular deviation, in the vertical, a prism was added to the glass. He was ordered O. D. + 2. (for reading.) O. S. + 9. ⌓ P. 4° base down (for distance).

It may be well to bear in mind the fact that discomfort from

the use of cataract lenses may be entirely due to muscular deviations, and we should order the proper prismatic correction wherever needed.

ABSTRACT OF A PAPER ON

THE CURVILINEAR REFLECTION OF WEISS, AS A PRODROMAL SIGN OF MYOPIC DISTENSION.

By B. ALEX RANDALL,

Philadelphia, Pa.

Dr. Randall called renewed attention to this phenomenon as more often seen in his later experience, especially when sought with a short focus mirror, and stated that his enlarged experience corroborated the claim of Weiss, that it is frequently an index of myopic distention. It marks an exaggerated prominence of the nasal margin of the optic nerve coincident with the distension of the posterior pole, and whatever its precise etiological relations, seem to have distinct prognostic meaning. It should, therefore, be sought as a routine matter; and its presence, especially in young, distensible eyes, should be taken as a warning to use every precaution, by mydriatic rest, scrupulous correction of the refraction error, careful use and general good hygiene, to forestall the dangers of progressive myopia.

ABSTRACT OF A PAPER ON

EXCENTRIC POSES OF THE HEAD.

By J. E. COLBURN, M.D.,

Chicago, Ill.

Mal-position or eccentric poses of the head may be assumed to prevent diplopia, or to relieve the strain put upon paralyzed, weak or illy balanced muscles. Some of the typical positions of the head and distortion of features occur as follows:

1st. Head thrown backward, mouth open, nostrils dilated, eyelids drooping.

2nd. Inclination of the head to right or left, chin retracted, mouth distorted and working.

3rd. Head bent forward, chin retracted, eyebrows elevated, forehead corrugated.

In eccentric poses of the above mentioned type there is binocular vision, and no distress is experienced from attempting to use the eyes, but as soon as the head is forced to the normal pose, diplopia or muscular asthenopia promptly occurs, though the motility of the eyes may not be abridged in any of the normal range of movements.

In another and rarer class of cases presenting the same eccentricities as to pose of head, there is partial or complete paralysis of one or more sets of muscles, diplopia with or without suppression of the double image, the head always moving in the direction of the seeing eye. The correction of the pose of the head must be accomplished by tenotomy and advancement, and by keeping the patient for a time, under the surveillance of some one who will keep them from following the habits already established. The head should be fixed in the normal position.

In the study of these cases I have used the corneal reflex, Stevens' phorometor, Maddox rod and prism, and various little

modifications that are so purely personal that I see no reason for publishing them.

DISCUSSION.

Dr. Gould:

I have had two or three cases that somewhat resembled those reported by Dr. Colburn. One patient carried his head back in order to avoid double vision due to heterophoria. By carefully adjusting glasses his mucles were strengthened so that he held his head in a normal position. One other patient had quite a distortion of his features, his forehead being wrinkled in concentric curves clear from his eye to the roots of his hair. It was very noticable After three months he was holding his head straight with the skin of his forehead nearly straightened out. I had still another case somewhat similar to this one.

Dr. Jackson:

I think that the class of cases to which Dr. Colburn has called attention is a very important one; and one to which the attention of the profession needs to be more generally directed. I feel like taking exception however to his classing them as cases of heterophoria. If I heard some of them correctly, they are rather cases of paralytic squint, in which it is impossible to obtain binocular vision, in the central portions of the field of vision. I have seen quite a number of these cases; and have also seen the other cases, which could be classed as heterophoria, because binocular vision could be obtained in all portions of the field, though only with undue effort. When Dr. Stevens gave us the new terms, the "phorias," I hoped that they would be applied only to cases of muscle error which correspond to concomitant squint; and that for these cases of special weakness in one muscle, or group of muscles, we might still use the very significant term—insufficiencies.

ABSTRACT OF A PAPER ON

EXOSTOSIS OF THE ORBIT.

By ROBERT FIELDS LeMOND, A.M., M.D.,
Professor of Diseases of the Eye and Ear in Gross Medical College,
Denver, Colo.

When I received a letter last fall from the President of the Ophthalmic section of this distinguished body requesting me to contribute a paper on this occasion, I immediately began to cast about for a subject upon which to write. In the selection of a subject I had three objects in view, viz :—

1st. One in which great need existed for its further development to a more successful and satisfactory termination both to the physician and patient.

2nd. One in which there was sufficient gravity to claim the attention, interest and hearty co-operation of every ophthalmic surgeon present.

3rd. One on which I very much need to be enlightened myself. I believe it was Archimedes who said "if you desire wisdom, acknowledge your ignorance that your teachers may know where to begin."

I therefore present to you, the great God-head of Ophthalmology, the subject "Exostosis of the Orbit," a morbid condition which has successfully baffled the best skill that is known either in medicine or surgery to-day: because statistics show that over sixty per cent. of the cases which have been reported have succumbed either to septic meningitis or pressure upon the brain following the operation It is our duty as benefactors of the human race to make a great and united effort to overcome any evil which is claiming victims among our kind at the rate of from sixty to seventy out of every one hundred it attacks.

Regarding the etiology of exostosis of the orbit, comparatively little is definitely known. It often supervenes upon periostitis or ostitis, and is thought by a number of writers to be of syphilitic diathesis, as a positive knowledge of syphilitic complications has been known in a number of cases reported.

Again, it is thought by others that the osteoma is due to a diseased condition of the frontal or ethmoid bone, or of the frontal sinus, remote from a syphilitic cause.

These osseous tumors are usually very hard to the touch, showing, even at an early stage, a remarkable amount of resistance.

According to the best authorities, in the early stage of this trouble, the treatment should be to the promotion of all means of absorption by the internal administration of pot. iodidi, and a thorough saturation of the tumor locally with mercurial ointments. The patient's general health should be looked after closely.

A very large per cent. of exostoses occurs in persons under twenty-four years of age. In some cases it has been discovered in babes as young as one or two months old; and in one case, was found to exist at birth A large majority occur between the ages of ten and twenty years, and attacks about one out of every thirty thousand cases of eye trouble. Bornhaupt collected eleven cases of exostosis of the orbit which were operated upon, and out of that number, seven died of septic meningitis (63 per cent); two cases recovered, and two were lost sight of and the final results of their operations were never obtained. Berger and Tryman collected nine cases which were operated upon, six of whom died (66 per cent).

From the recorded experience of some one-hundred authors in this department of surgery, the average mortality will be some 65 per cent. I herewith append a unique case of this trouble:

A Mr. R., aged twenty-four, a very large and well proportioned man, weighing 190 pounds, who was complaining of double vision and a blurring of the right eye. In addition to the above symptoms, there was also quite an enlargement on the lower orbital bone of the same eye. It was continuous with the lower orbital bone throughout its whole extent It also extended upward nearly three quarters of an inch, and backward continuous with the floor of the orbit to near the optic foramen; the enlargement at this time was about the size of a pullet egg. The visual axis in the right eye was at an angle of about thirty-five degrees from that of the left eye. There was little or no inflammatory action present, nor had there been at any time since the beginning of the enlargement, which the patient said was about twelve months before. His vision in the right eye, at this time, was $\frac{7}{20}$. He was raised on a Missouri farm, and gave an excellent family history, having never had any serious sickness in his life. His parents were both living, as well as several brothers and sisters. The ophthalmoscopic examination showed no organic change, but there was a slight tortuosity of the blood-vessels of the retina. I told him that I was sure that, at the past rate of the development of the tumor, he would very soon be forced to one of two things: be operated upon or lose the eye. After advising with some of the members of his family who had accompanied him to Denver, he decided upon the former, and on the 17th of December, 1892, I performed the operation with the assistance of Dr. Coover.

THE OPERATION.

The patient being completely anesthetized, I made a horizontal incision commencing about six lines below the internal canthus, and extended it to a little beyond the external canthus, cutting entirely through the integument down to the periostium. I then dissected the flap up until it could be laid back upon the

super-orbital bone, which was held by my assistant. I then dissected up the periostium and began chiselling into this bony mass. I very soon concluded that I was pretty much in the same condition as the old pioneer, who wished for some one to help him turn the wild-cat loose, as I could see, by the way that it completely annihilated the edges of all my chisels, that I had a hard job on my hands. I took a very small chisel and succeeded in drilling several small holes into the bony mass; then, by means of bone pliers, connected these holes, which gave me a leverage by which I was enabled to pry off a number of pieces, thereby reducing this bony mass about two-thirds of its size. I then attempted to pry another piece out of the floor of the orbit, knowing that it would add very much to the utility of the eye; but in this effort I was completely foiled, as it was so unyielding that I felt, if I brought to bear any more weight on my pliers, I should certainly burst through the floor of the orbit, and possibly put my patient in a condition to need an undertaker instead of a physician. So we decided it was wisest to proceed no further, as we felt that the operation so far would be in a measure successful.

I then dressed the wound antiseptically, using a bi-chloride of mercury solution, 1 to 5000, about as hot as it was comfortable to bear, giving the wound a thorough drenching. I then drew the flap down and bound it in its former position with about half a dozen stitches; then bandaged his eye. The patient rested very well that night, and felt very comfortable the next day. After seeing him every day for about one week, I dismissed him, telling him, however, to call occasionally and let me see how he got along. He visited me about three times during the following month. By this time there was comparatively slight variance in the eye from its fellow; the diplopia was completely gone and his vision measured $\frac{20}{30}$ in his right eye, and believing I could that render him no further assistance

I dismissed him finally, feeling that I had every reason to be thoroughly satisfied with the result obtained.

DISCUSSION.

Dr. Jackson:

The case I reported last year has continued well so far as I know. In that case I think it was a necessity, in order to remove it without enucleating the eye, to divide the tumor before trying to take it out. It was of excessive hardness, but after breaking several instruments on it I found it could be pierced by a hand drill.

Dr. Knapp:

This is certainly a disease which is extremely important. the majority of these tumors are in the upper-inner part of the orbit and spring from the frontal sinus. A goodly number are on the nasal side of the orbit and originate in the ethmoid. I had a patient on whom I operated for a tumor of this kind four hours, and got out only a small portion of the tumor itself. That man had an attack of meningitis and died eleven weeks after the operation. The tumor formed in the frontal sinus and penetrated into the skull. Such cases you see in large pathological museums, especially those in London. Hence the former advice: leave these tumors alone. I operated on a gentleman æt. 45, about thirteen years ago. The tumor was larger than a large walnut. I got it out by the method which Maisonneuve followed in removing a large intranasal osteoma, viz., by *subperiosteal enucleation*. It took me a whole hour. The patient made a rapid recovery without suppuration. He is living, healthy, and no one now could discover from which orbit the tumor had been removed. The method is essentially that followed in the removal of all growths, not by attacking and removing them piece-meal, but by shelling them out from the neighboring sound tissue. It has done me good service, partic-

ularly in cases of ivory exostosis of the orbit and the external ear canal.

Dr. Allport:

In this connection I would say I had a case of exostosis of the meatus some time ago that I successfully removed with the dental engine, not with the drill, however, but with some sharp burrs. The burrs became dull frequently during the operation, and I had to insert a number of them before I finished. I simply brought it to the top of the tumor and kept smoothing it down until I got down to the natural level and then stopped. I have also been using the dental engine in the same way in some of my mastoid operations. I simply burr off the outer surface until I get an opening. In this way I think we have a better method for operating on the mastoid. It is all done quickly and usually with success.

Dr. LeMond closing:

We are very much pleased to have Prof. Knapp present with us, and I feel complimented to have him discuss my paper. As I went over carefully his recorded experience I found it more extensive than any surgeon's in the United States, on exostosis of the orbit. I am very much pleased to have heard what he had to say.

In the last few months I have done two operations for exostosis of the external auditory canal. I had begun to think that perhaps I had better change my title and set up altogether for diseases of this character. I did both of these operations by means of the dental engine and a small chisel. One of these cases, a gentleman thirty six years old, told me this had been forming for about five years. It had completely occluded the external auditory canal and rendered it almost impossible for the ceruminous discharge to be removed. I took pieces of this

bone to a Professor of Pathology and had it examined but it was found to be nothing but the ivory character of exostosis.

I beg pardon, Mr. President, for having digressed in mentioning the exostosis of the external auditory canal, and would not have done so had not one of the gentlemen, discussing my paper, introduced the subject. I was glad, however, the gentleman referred to it because it is a subject in which I am very much interested; and more especially, at this meeting, was I anxious to hear it discussed, from the fact of its being such a rare affection that you meet with in this department that it is a hard matter to get information regarding its characteristics. I have enjoyed the gladdened expectation of this hour, and was anxious to be enlightened upon this rare field of surgery.

I desire to thank Prof. Knapp especially for the kindly manner in which he handled my paper.

Department of Otology, Laryngology and Rhinology.

GEO. H. PRICE, M. D., EDITOR, 621½ Church Street,
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THE NEW YORK ACADEMY OF MEDICINE.

Section on Laryngology and Rhinology, Stated Meeting, held Wednesday Evening, May 24th. 1893.

DR. CHARLES H. KNIGHT, CHAIRMAN.

A modified electrical head illuminator was exhibited by Dr. Wendell C. Phillips. The illuminator consists of a six volt, four-candle-power lamp, which is fastened to the head by means of a steel band running from before backwards. It is light in weight, easy of manipulation and has a very perfect lens. By means of a thumb-screw at the side of the lamp cylinder, the focus may be regulated easily and quickly. Dr. Phillips said he considered the instrument an improvement upon the various forms of head illuminators now in use; it is especially serviceable in ear cases and in children, where it is difficult to keep the focus. The lamp is made of frosted glass, which gives an illumination without any spots. He also exhibited a modification of the lamp that is usually employed for antrum illumination. The modification consists in the lower half of the lamp being frosted. He also showed a rheostat which can be attached to a storage battery, thus allowing the battery to be used for both illumination and cautery purposes.

Dr. Robert C. Myles said he has experimented with the lamp shown by Dr. Phillips, and it has given better satisfaction than

any other he has employed, It is especially serviceable for examining the ear.

AN UNUSUAL CASE OF TUBERCULOSIS OF THE LARYNX.

Dr. F. E. Hopkins reported this case, and presented the larynx. The patient was a man, aged 52 years, a brick-handler by occupation, married and the father of healthly children. No family history of tuberculosis. The patient had always enjoyed good health until December, 1892, when he observed a slight hoarseness, accompanied by cough. This steadily grew worse. He also began to lose in weight. In February, 1893, he was compelled to give up his work. Physical examination of his chest showed advanced pulmonary lesions, and the sputa contained tubercle bacilli in large numbers. The mucous membrane of the pharynx appeared to be congested. Examinations of the larynx revealed a strictly unilateral lesion affecting the left side. It consisted of a rounded tumor having a smooth surface and covered by congested mucous membrane. The swelling was firm and involved the arytenoid, the ary-epiglottic fold; and the ventricular band but did not extent beyond the larynx. The left vocal cord was entirely concealed by the overhanging mass. which extended nearly to the median line. About the centre of the tumor there was a slight depression, a clear cut ulcer, and upon the anterior edge of the ulcer there was a single prominence of granulation tissue. The left side of the larynx was absolutely immovable. With the exception of some congestion, the right side was free from any lesion. Externally, on the left side, a single lymphatic gland was involved This was of stony hardness, and remained unchanged during the period the patient was under his observation. The general appearance of the growth and its unilateral situation suggested malignant disease. There was no pain at any time, save in the act of coughing. There was some difficulty in swallowing solid food There was no tenderness upon pressure over the larynx externally. The

patient complained of a constant feeling of dryness, limited to the left side of the throat. There was cough, with profuse expectoration, worse at night. The patient died on April 14th., 1893. The larynx was removed twelve hours after death. Sections of it, examined microscopically by Dr. H. B. Douglass, showed the mucous membrane to be almost totally destroyed by tuberculous ulceration, being replaced by tissue in a state of true coagulation necrosis. In certain portions, typical tubercles were present, with contents partly caseous. The submucosa was diffusely infiltrated with lymphoid cells and proliferating connective tissue elements. The glandular tissue near the surface was infiltrated with tuberculous products, and partly in a state of caseous metamorphosis. There was no evidence of pre-existing malignant infiltration or other pathological changes.

Dr. C. C. Rice suggested that the case might have been one of syphilis associated with tuberculosis.

Dr. Hopkins replied that anti-syphilitic treatment was instituted, without any result excepting to disturb the patient very much.

Dr. H. B. Douglass, who examined sections of the growth, said the case did not appear to be one of syphilis on account of the peculiarity of the infiltration and the presence of tubercles. The cells were lymphoid in character. The form of the tumor was also rather characteristic, being caseous in parts. There was no thickening of the blood-vessels. The elements of malignant infiltration were entirely absent.

Dr. Hopkins said the condition of the man was so desperate, even when he first came under observation, that such heroic treatment as curetting and the application of lactic acid seemed out of the question.

INTERNAL MASSAGE IN DISEASES OF THE NOSE AND THOAT.

Dr. W. Freudenthal read a paper on this subject. Direct massage of the mucous membrane of the nose and throat, as has been shown by the experiments of Kronecker and Stirling, acts

by thoroughly perfusing and filtrating the tissues, which not only furnishes new building material, but removes very quickly the asphyctic and obsolete secretions. This latter statement is explained by the fact that massage affects the lymph circulation also, because not only is the flow of lymph accelerated, but also the reflux of venous blood. Therefore, massage indirectly affects the resorption both of normal and pathological fluids.

This method of treatment is indicated in cases where it is desirable to stimulate the normal physiological functions of the organism, to produce a lively oxidation in the tissues, and to remove hyperemia and inflammation; furthermore, it is the best method of resorption of all those pathological products which can be returned to the circulation without detriment to the organism.

Dr. Freudenthal exhibited an electric vibrator which he has devised for the purpose of applying massage to the mucous membrane of the nose and throat. This instrument, which was manufactured by Mr. E. B. Meyrowitz, of New York, is attached to the wires of an electric battery; the extremity of the instrument, which is placed directly against the mucous membrane that is to be treated, is flattened in the shape of a small button, and when the current is turned on it makes about 132 oscillations each second. To use the instrument, neither practice nor dexterity is necessary. Any person accustomed to use instruments can operate it at the first trial. The instrument acts by tapping or rubbing the parts. At the beginning, when the patients are not accustomed to the treatment, the application is only made for five seconds; this time is lengthened at each visit. In this manner the entire surface of the nose and throat is manipulated. As to the class of cases in which this method of treatment is indicated: the author stated that he has successfully treated by means of internal massage a number of cases of chronic hypertrophic rhinitis, atrophic rhinitis and turbinated hypertrophy. In ozena he has not yet had an opportunity to apply the treatment, although such cases have been cured by it in Europe. He has treated a number of cases of hay fever, with marked shortening in the duration of the attack. Internal massage is contra-indicated in all parasitic and infectious diseases; furthermore, in all inflammations where the inflammatory product has developed a quality pernicious to the organism.

[*Will be continued in next issue.—Editor.*]

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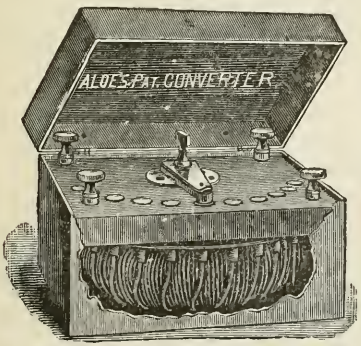

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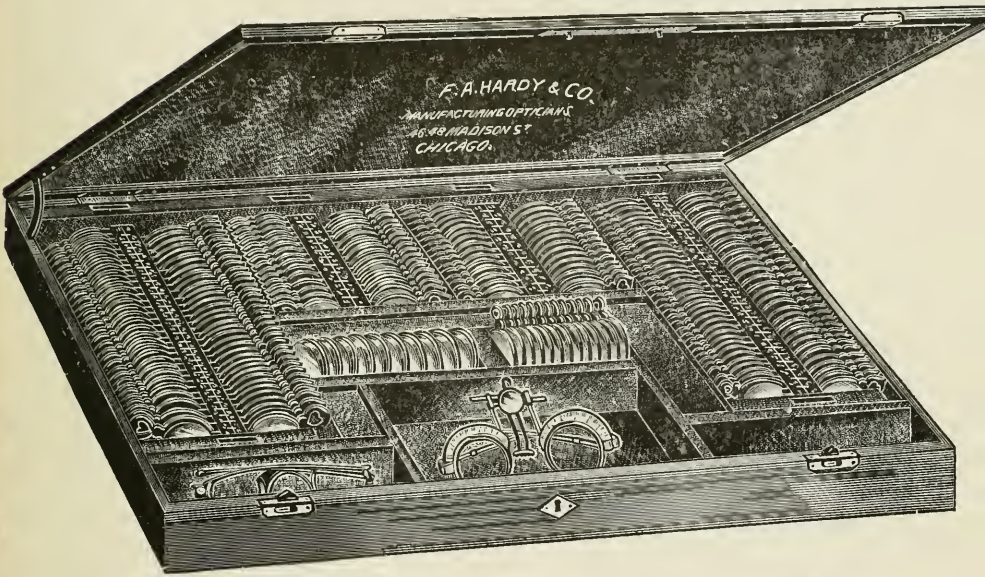

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